
# 2006 Annual Meeting Program Committee

# Continuing Education

# Declaration of Speaker Financial Interests or Relationships

# Saturday, 6 May 2006

### MR Physics for Physicists - Day 1

**08:30 to 18:00 ~ Room 6E**

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|---|---|
| Origins of the Equations of Magnetization Dynamics | Michael H. Buonocore |
| Numerical Implementation of the Bloch Equation to Simulate Magnetization Dynamics and Imaging | Hugues Benoit-Cattin |
| Alternate Mechanisms for Spin Polarization | Bastiaan Driehuys |
| Imaging Strategies for Hyperpolarized Elements and Molecules | John P. Mugler, III |
| Contrast Mechanisms in Molecular Imaging ***- No Syllabus Contribution Available*** | Robert N. Muller |
| Quantum Mechanical and Semi-Classical Theory of Relaxation | Valerij G. Kiselev |
| Relaxation and Contrast Mechanisms in Living Tissue | Greg Stanisz |
| Fast SE/TSE/RARE, Refocusing with Low Flip Angle Pulses | Klaus Scheffler |
| Fast Gradient Echo Including SSFP | Brian A. Hargreaves |
| Pulse Sequence Design for EPI and Non-Cartesian Sampling | Craig H. Meyer |
| Limits of SNR and Practical Consequences | Klaas Pruessmann |

### Quantitative Image and Data Analysis - Day 1

**09:00 to 17:40 ~ Room 613-614**

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|---|---|
| Introduction to Quantitative Analysis | Paul S. Tofts |
| Mapping of Quantitative MR Parameters | Gareth J. Barker |
| Statistical Analysis of Quantitative MR Data: Basic Methods | John Petkau |
| Artifacts, Noise, Filtering and Compensation Techniques | Geoffrey J. M. Parker |
| Image Registration and Motion Correction | Mark Jenkinson |
| Feature Extraction, Shape Fitting, and Image Segmentation | William R. Crum |
| Quantitative Morphology: Volumes, Shapes, and Voxel-Based Measures | Jean-Francois Mangin |
| Motion Estimation, Modeling, and Compensation | Elliot R. McVeigh |
| Bulk Flow Measurements and Angiography | Dennis L. Parker |

### Advanced Body Imaging

**08:30 to 18:15 ~ Room 6D**

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|---|---|
| Approach to Diagnosis of the Difficult Liver Lesion with MRI | Richard C. Semelka |
| Liver Specific Contrast Agents: An Update | Günther K. Schneider |
| Assessing Tumor Response in Liver Therapy | Ihab Kamel |
| Pancreas: From Structure to Function | Koenraad Mortele |
| MRCP and MRI in the Evaluation of Bile Duct Obstruction | Caroline Reinhold |
| MRI of Ano-Rectal Diseases | Jaap Stoker |
| MRI of Prostate Cancer: Diagnosis, Staging, and Treatment | Clare Tempany |

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| The Role of MRI in Evaluating Benign Uterine Disease | Deborah Levine |
| Diagnosing, Staging and Stratifying Patients with Malignant Uterine Disease | Hedvig Hricak |
| Characterizing Adnexal Masses: Pearls and Pitfalls | Evan S. Siegelman |
| Optimizing Your Breast MRI Technique | Nola Hylton |
| MRI Criteria to Diagnose Breast Cancer | Christiane K. Kuhl |
| MRI Screening of High Risk Women | Constance D. Lehman |
| MR Guided Breast Interventions | Elizabeth A. Morris |

**Clinical MRI: From Physical Principles to Practical Protocols**

**08:00 to 17:45 ~ Room 615-617**

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|---|---|
| Overview of MR Physics | Norbert J. Pelc |
| Musculoskeletal MR Principles (Spin-Echo, FSE, Gradient Echo) | Brian A. Hargreaves |
| Musculoskeletal MR Practical Protocols | Timothy J. Mosher |
| Body MR Principles (STIR, Gradient Echo, Fast Imaging Tricks) | Martin J. Graves |
| Body Protocols | David J. Lomas |
| Vascular MR Principles (TOF, 3D GRE) | Frank R. Korosec |
| Vascular Protocols | James F. M. Meaney |
| Neuro MR Principles (FLAIR, EPI-Perfusion, Diffusion) | Timothy P.L. Roberts |
| Neuro Protocols | David J. Mikulis |
| Cardiac MR Principles (Gating, True FISP, Phase Contrast) | Christine H. Lorenz |
| Cardiac Protocols | Vivian S. Lee |

**Diffusion and Perfusion Methodology**

**08:30 to 18:15 ~ Room 6C**

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|---|---|
| Theory of Diffusion | Peter J. Basser |
| Biophysical Underpinnings of Diffusion | Christian Beaulieu |
| Tensor Encoding / Decoding | Derek K. Jones |
| Sequences for Diffusion MRI | James G. Pipe |
| Artifacts and Pitfalls in Diffusion MRI ***- No Syllabus Contribution Available*** | Carlo Pierpaoli |
| DSI/ Qball/ GDTI and Tractography | Andrew L. Alexander |
| Theory of Perfusion Measurements | Leif Østergaard |
| DSC Perfusion (with Pitfalls) | Fernando Calamante |
| ASL Perfusion - Pulsed/Continuous | Afonso C. Silva |
| New Ideas in Perfusion | Xavier G. Golay |
| Exchange | Greg J. Stanisz |
| Clinical Applications of Diffusion/Perfusion MRI: A Review | Jeffry R. Alger |

**Molecular Imaging**

**08:00 to 17:50 ~ Room 602-604**

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|---|---|
| Introduction | Markus Rudin |
| Imaging Technologies I: Physical Principles, Technical Issues | G. Allan Johnson |
| Imaging Technologies II: Comparison of Techniques, Strengths/Weaknesses, Fusion | Umar Mahmood |
| Combined Technologies: MRI/PET, PET/CT, MRI/Optical – Instrumental Aspects ***- No Syllabus Contribution Available*** | Arion Chatziioannou |
| Concepts of Probe Design I: Physical Principles of Reporter Moieties | Silvio Aime |
| Concepts of Probe Design II. Design of Target-Specific Probes | Klaas Nicolay |
| Combined Technologies: Multimodal Probes | Natarajan Raghunand |
| Non-Invasive Imaging of Cell Signaling | Alnawaz Rehemtulla |
| Imaging the Function of Gene Products | Gary Luker |
| Monitoring Cell Migration | Jeff W .M. Bulte |

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| Molecular Imaging in Drug Research | Nick Van Bruggen |
| Molecular Imaging and Atherosclerosis | Zahi A. Fayad |
| Molecular Imaging in Experimental Therapeutics of Cancer | Brian D. Ross |

**MR Spectroscopy in Clinical Practice**

**08:30 to 18:00 ~ Room 611-612**

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|---|---|
| Basics of MR Spectroscopy for the Practicing Clinician | Jeffrey R. Alger |
| 1D, 2D and 3D Localization Techniques and Shimming | Markus von Kienlin |
| Data Processing and Interpretation | Thomas Ernst |
| 1D and 2D Quantification Methods | Mary A. McLean |
| Quality Assurance and Artifacts | Roland Kreis |
| Clinical Potential of C- and P-MRS | Stefan Bluml |
| MRS in Congenital Metabolic Disorders | Kim Cecil |
| MRS in Pediatric Tumors | Soonmee Cha |
| MRS in Perinatal Asphyxia | Daniel B. Vigneron |
| MRS, MRI & fMRI in Epilepsy Surgery | Francois Lazeyras |
| MRS in Therapy Planning and Follow-up of Adult Brain Tumors | Alberto Bizzi |
| MRS in Stroke, MS and Infectious Diseases | Peter B. Barker |
| MRS in Neurodegenerative Diseases | Adam D. Waldman |
| MRS in Psychiatric Diseases | Perry F.Renshaw |
| P31-MRS of Muscle Diseases | Patrick J. Cozzone |
| MRS of Prostate Diseases | Rao P. Gullapalli |

**RF Systems Engineering**

**08:30 to 18:15 ~ Room 618-620**

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|---|---|
| Overview of Signal Detection and the RF Chain | Arne Reykowski |
| Principles and Modeling of the Signal Detection by a Coil | William A. Edelstein |
| Introduction to the World of RF; Transmission Lines, Impedence Transformers, and RFComponents | Patrick J. Ledden |
| RF Measurements: the Network Analyzer and Smith Chart | Ed B. Boskamp |
| Preamp Design and Characterization | George R. Duensing |
| T/R Switchs, Baluns, Traps, and Active Detuning Elements | Xiaoyu Yang |
| Volume Coil Types and Design Principles | Cecil E. Hayes |
| Array Coil Types and Design Principles | Hiroyuki Fujita |
| Modeling the EM Wave Interaction with the Body and SAR | Tamer S. Ibrahim |
| Transmit SENSE Coil | Mark A. Griswold |

# Sunday, 7 May 2006

**MR Physics for Physicists - Day 2**

**08:30 to 18:00 ~ Room 6E**

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| MR Elastography | Ralph Sinkus |
| Velocity Encoding and Flow Imaging | Michael Markl |
| Gridding for Non-Cartesian K-Space Sampling | James G. Pipe |
| Reconstruction for Multi-Coil Acquisition | David J. Larkman |
| Generalized Spatial and Temporal Interpolation, Limited Data Reconstruction | Bruno Madore |
| Overview of the Technical Challenges | Paul R. Harvey |
| Optimized Pulse Sequences at High Field | Oliver Speck |
| Principles of Parallel Transmission | Peter Börnert |
| Physical Principles for the Assessment of MRI Safety at High Field | Hans Engels |

**Quantitative Image and Data Analysis - Day 2**

**09:00 to 17:40 ~ Room 613-614**

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| Perfusion/Permeability 1: Tracer Kinetic Modeling Using Contrast Agents | David L. Buckley |
| fMRI Modeling and Analysis | Mark Woolrich |
| Perfusion/Permeability 2: Modeling of Arterial Spin Labeling Signals | David Alsop |
| Spectroscopy Modeling and Analysis | Else R. Danielsen |
| Elastography Modeling and Analysis | Armando Manduca |
| Data Presentation and Interpretation: Rendering, Data Fusion, and Surgical Planning | Derek L. G. Hill |
| Quantitative Data in Clinical Practice ***- No Syllabus Contribution Available*** | A. Gregory Sorensen |

**Experimental Methods in MR of Cancer**

**08:30 to 17:15 ~ Room 6C**

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|---|---|
| Evaluating Pathways, Inhibition and Regulation Using MRS | Sabrina M. Ronen |
| Choline Metabolism: Meaning and Significance | Hadassa Degani |
| Clinical Applications of Magnetic Resonance Spectroscopy | Arend Heerschap |
| Measuring Vascular Properties Using Contrast Agents | Martin O. Leach |
| Tracer Kinetic Models: Extracting Physiological Vascular Information | David L. Buckley |
| Measuring Vascular Properties Using Intrinsic Contrast Mechanisms (inc BOLD) | Gregory S. Karczmar |
| Hypoxia and Its Assessment | Ralph P. Mason |
| Clinical Applications of MR Methods that Assess Tumor Vascular Functionality | Anwar Padhani |
| Associating MR Findings with MR Gene and Protein Expression | Samira Guccione |
| Diagnosis of Cancer Using MAS | Ingrid S. Gribbestad |
| Apoptosis: MR Consequences | Risto A. Kauppinen |
| Diffusion MRI:  A Biomarker for Cancer Treatment Response | Brian D. Ross |

**Multi-Modal fMRI: Physiology, Acquisition, and Analysis**

**08:30 to 18:15 ~ Room 611-612**

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|---|---|
| Brain Oscillations and Neural Networks | Arno Villringer |
| Physiology, Hemodynamics, and BOLD Signals | Risto A.Kauppinen |
| fMRI Paradigm Design | Nick F. Ramsey |
| Pre-processing of BOLD fMRI Data | Mark Jenkinson |
| General Linear Model for BOLD fMRI Analysis | Robert W. Cox |
| Independent Component Analysis of BOLD fMRI Data | Vince D. Calhoun |
| Diffusion Tensor Imaging: Acquisition and Processing | Susumu M. Mori |
| DTI/fMRI: Integration/Synergy | Dae-Shik Kim |
| Low-Frequency BOLD Fluctuations and Brain Functional Connectivity | Vesa J. Kiviniemi |
| Perfusion-Based fMRI | Thomas T. Liu |
| Blood-Volume-Based fMRI | Hanzhang Lu |

**Demystifying Biomedical MR Spectroscopy: Challenges, Advanced Concepts, and Applications**

**08:00 to 15:15 ~ Room 615-617**

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|---|---|
| The Art of RF Pulse Design for MRS | John Pauly |
| Spectral Editing - Uncovering Hidden Metabolites | Ralph E. Hurd |
| What is the "Hype" in  Hyperpolarization? | Jan Wolber |
| New Approaches to Spectral Processing and Quantification | Sarah J. Nelson |
| Ex Vivo Spectroscopy - Linking the Benchtop to the Clinic | John R. Griffiths |
| Multi-nuclear MRS of Metabolic Dynamics in the Brain | Rolf Gruetter |
| New Approaches to MRS of Cerebral Disorders | Stefan Bluml |
| Spectroscopic Window on Tumor Metabolism | Michael Garwood |

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| Advances in MRS of Diabetes and Obesity | Claudia Neumann-Haefelin |

**Musculoskeletal Imaging**

**08:00 to 17:25 ~ Room 618-620**

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| Shoulder MR Update | Christian W. Pfirrmann |
| MRI of the Elbow | Russell C. Fritz |
| MRI of Muscle Injury | Robert D. Boutin |
| MRI of the Wrist and Hand | William B. Morrison |
| Knee MR Update | Doug P. Beall |
| MRI of the Ankle | Mark Collins |
| MRI of the Hip | Doris E. Wenger |
| Bone Marrow Imaging | Thomas M. Link |
| MRI of Soft Tissue Pseudotumors | Suzanne E. Anderson |

**Advanced Brain MR Imaging**

**08:30 to 17:45 ~ Room 602-604**

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| Protocol Update: Stroke, Tumors, Epilepsy and MS ***- No Syllabus Contribution Available*** | Norman J. Beauchamp |
| High-Resolution Cortical Imaging | Alexander J.S. de Crespigny |
| Parallel Imaging: Concepts and Applications | Lawrence L. Wald |
| Brain Imaging at 3T and Challenges at 7T | Kamil Ugurbil |
| Measuring Brain Volume Changes: the Tools | Stephen M. Smith |
| Volumetrics of Brain Development | Rhoshel K. Lenroot |
| Volumetrics of MS and Aging | Nicola De Stefano |
| DSC Perfusion: Concepts and Applications | Fernando Calamante |
| ASL Perfusion: Concepts and Applications | David Alsop |
| DTI: Concepts, Quantification and Quality Issues | Derek K. Jones |
| DTI of Brain Development | Petra Hüppi |
| Fiber Tracking: Concepts and Applications | Aaron S. Field |
| Data Analysis, Reproducibility and Reliability, Pitfalls | Peter Jezzard |
| Clinical Applications: Surgical Planning in Tumors | Alberto Bizzi |
| Clinical Applications: Neurodegenerative Disorders and MS | Micheal D. Phillips |

**Cardiac MRI**

**07:30 to 17:15 ~ Room 6D**

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|---|---|
| Imaging of Coronary Artery Disease with MRI/MRA | David A. Bluemke |
| Ischemia Detection Using Perfusion, BOLD, etc. | Frederick H. Epstein |
| Ischemia Detection Using Wall Motion, Strain, etc. ***- Late addition to program/No syllabus contribution available*** | Raja Muthupillai |
| Myocardial Viability: DE-MRI and LD-Dob | Scott D. Flamm |
| MESA | Joao A.C. Lima |
| ICELAND MI: An Epidemiology Study of Unrecognized Myocardial Infarction ***- No Syllabus Contribution Available*** | Andrew E. Arai |
| MR-IMPACT (Perfusion) | Juerg Schwitter |
| Controversies and Approaches to Stem Cell Revascularization ***- Late addition to faculty/No syllabus contribution available*** | Guilherme Silva |
| Evaluation (Function, Ischemia) of Stem Cell Therapy Patients | Michael Jerosch-Herold |
| Stem Cell Labeling, Tracking, and Delivery in Cardiovascular Disease | Dara L. Kraitchman |
| Stem Cell Therapy in Acute Myocardial Infarction | Albert C. Lardo |
| Cardiac Imaging: 1.5T vs 3.0T – Where's the Benefit? | Orlando P. Simonetti |
| Interventional CMR | Elliot R. McVeigh |
| Cardiac Intervention | Walter J. Rogers |